

Non-Rotating Elliptical Piston Cylinders, Type DZH

Features and Benefits

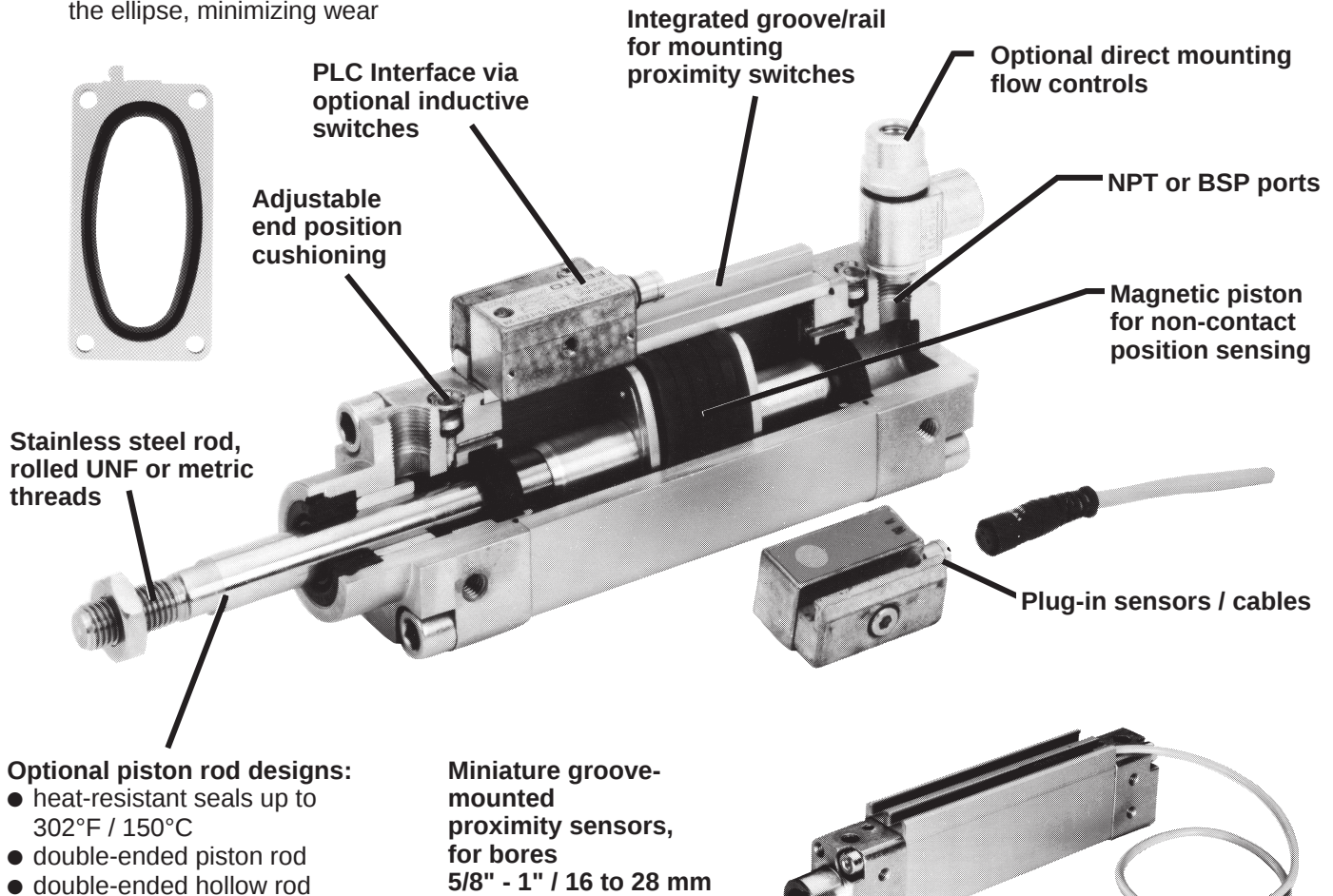
Slim, Flat, Elliptical Piston DZH Cylinders Provide Non-rotating Linear Actuation in up to 50% Less Space

■ Patented elliptical piston/seal design:

- provides non-rotation
- eliminates external guide hardware
- elliptical piston design spreads torque load evenly over the arc of the ellipse, minimizing wear

■ Bore sizes 5/8" to 1-1/2" 16 to 63 mm

■ Stroke lengths 0.04 to 40 in / 1 to 1000 mm



Wide selection of piston rod accessories:

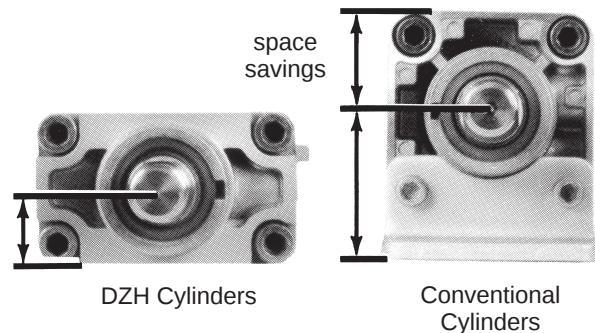
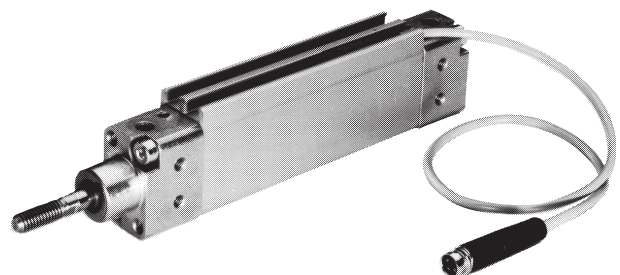
- rod clevis
- rod eye
- rod aligner
- coupling plate

Versatile Mounting options:

- front / rear / bottom / side mounting

Slim profile:

- Low center line height
- Reduces center-line distance between cylinders
- Up to 50% savings on space



Non-Rotating Elliptical Piston Cylinders, Type DZH

Double-Acting, Bores 5/8 to 2-1/2 in / 16 to 63 mm, Inch and Metric Series

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Double-Acting Cylinder

Non-rotating with Adjustable Cushioning at Both Ends

Type DZH-...-PPV-A

These cylinders have an elliptical piston which prevents shaft rotation and permits torque loads on the piston rod.

A single piece, extruded aluminum cylinder barrel provides for a smooth compact rectangular shape. An integral mounting rail simplifies mounting of reed type proximity sensors.

Bearing and end caps are butted directly to the cylinder barrel.

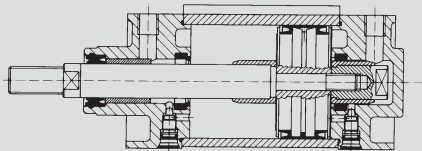
Options:

S2		S6	
S20			

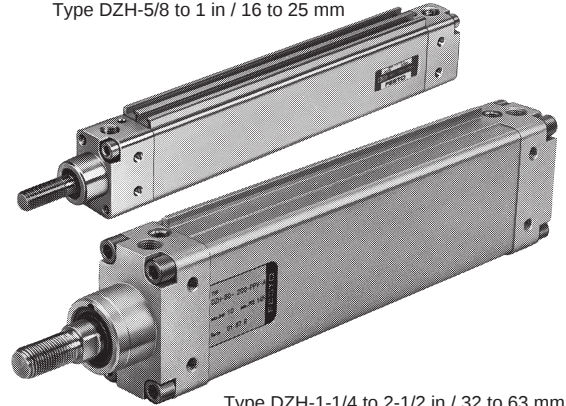
Piston Rod Accessories: (see page 812)

- Rod Clevis, Type SG
- Rod Eye, Type SGS
- Rod Aligner, Type FK
- Coupling Plate, Type KSZ

(For proximity sensors, see page 854)



Type DZH-5/8 to 1 in / 16 to 25 mm



Type DZH-1-1/4 to 2-1/2 in / 32 to 63 mm

The cylinder piston carries a permanent magnet that actuates proximity sensors. One or more proximity sensors may be attached to the mounting rail on the cylinder to permit proximity sensing of the end or intermediate positions of the cylinder.

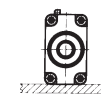
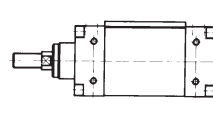
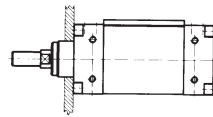
Direct mounting of cylinder

Mounting, front

Mounting, rear

Mounting, bottom

Mounting, side

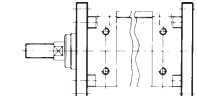
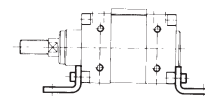
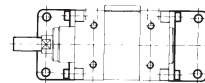


Available mounting hardware

Foot Mount, wide side
Type HZB

Foot Mount, narrow side
Type HZS

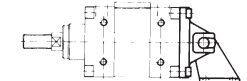
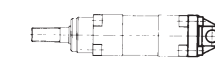
Flange Mount, Type FZS
front rear



Clevis Flange, narrow side
Type SZS, SZSB

Clevis Flange, wide side
Type SZS, SZSB

Clevis Foot Mount
Type LBN, LN, LBZB, LBZS



Order Number (see page 269)		Part No. and Type Code: DZH + bore + stroke + cushioning + sensing (+ Option) Ordering sample: Bore 63 mm, stroke 50 mm = 14076 DZH-63-50-PPV-A					
Medium		Compressed air (filtered lubricated or unlubricated)					
Design		Piston cylinder					
Max. Allowable Operating Pressure"		150 psi / 10 bar					
Temperature Range		−4 to +176°F / −20 to +80°C (Check working range of proximity switches)					
Materials		Bearing and end caps. Aluminum. Cylinder barrel: Anodized aluminum. Piston rod: X20Cr13 (Bores 16, 20, 25: X25CR NI 1891); Seals: Polyurethane					
Weight		See page 271					
Bore in / mm	Standard Stroke Lengths		Special Stroke length* min.-max.		Force at 90 psi / 6 bar lbf / N	Return Force at 90 psi / 6 bar lbf / N	Cushioning Length in / mm
	in	mm	in	mm			
5/8 / 16	1, 2, 3, 4, 5, 6, 8	25, 40, 50, 80, 100, 125, 160, 200	0.04 to 10	1 to 200	27.2 / 121	23.4 / 104	0.55 / 14
3/4 / 20	1, 2, 3, 4, 5, 6, 8, 10, 12	25, 40, 50, 80, 100, 125, 160, 200, 250, 320	0.04 to 12	1 to 320	42.3 / 188	35.5 / 158	0.67 / 17
1 / 25	1, 2, 3, 4, 5, 6, 8, 10, 12	25, 40, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500	0.04 to 20	1 to 500	66.3 / 295	55.5 / 247	0.67 / 17
1-1/4 / 32	1, 2, 3, 4, 5, 6, 8, 10, 12	25, 40, 50, 80, 100, 125, 160, 200, 250, 300	0.04 to 40	1 to 1000	108.6 / 483	93.3 / 415	0.75 / 19
1-5/8 / 40					169.5 / 754	142.3 / 633	0.83 / 21
2 / 50					264.8 / 1178	222.3 / 989	0.91 / 23
2-1/2 / 63					420.4 / 1870	378.1 / 1682	0.91 / 23

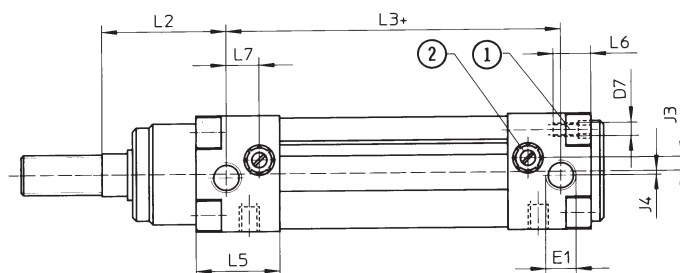
* For minimum stroke length, see page 265. ** Contact Festo

† These cylinders are sized according to the diameter of a circular piston having an area equivalent to that of the elliptical piston.

Non-Rotating Elliptical Piston Cylinders, Type DZH

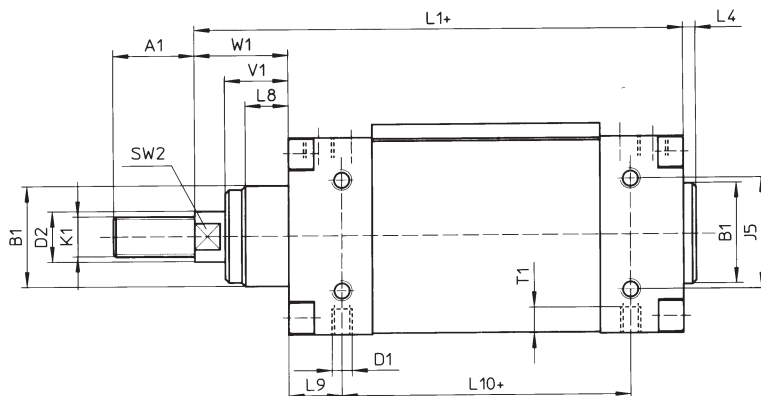
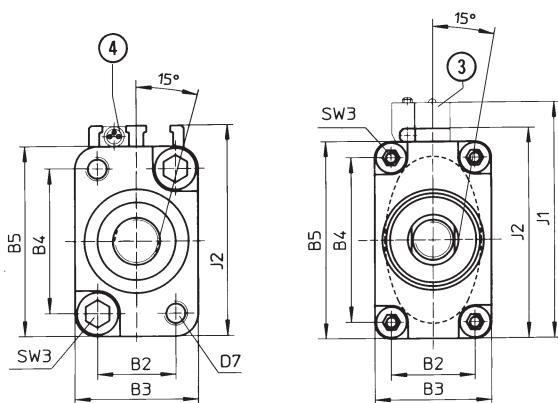
Dimensions

Type DZH...



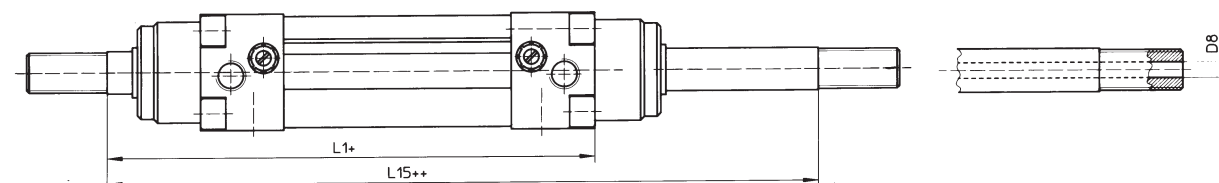
Type DZH-16 to 25 mm

Type DZH-32 to 63 mm

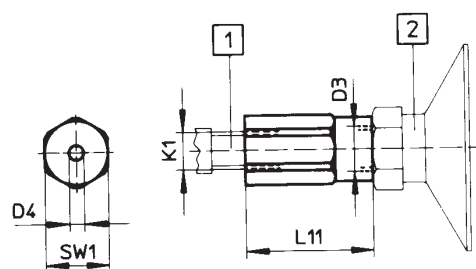


Dimensions for option S2 or S20, differing from standard

Shaft bore, option S20



Adapter Type AD... (for -S20 cylinders, metric series)



- ① Socket head screw with internal thread for mounting hardware
- ② Adjustment screw for adjustable cushioning
- ③ Proximity sensor Type SMEO-1, SMPO-1, SMTO-1...
- ④ Proximity sensor Type SME-S, SMT-8
- + = plus stroke length
- ++ = plus 2 x stroke length
- SW2 = wrench size to fit flats on piston rod
- SW3 = internal hex size

- ① Piston Rod
- ② Suction Cup (order separately)

Bore in / mm	Type	K1 thread	D3 thread	D4 in / mm	L11 in / mm	SW1 mm	Material
5/8 / 16	AD-M6-M5	M6	M5	0.09 / 2.3	1.06 / 27	10	Al, anodized
	AD-M6-1/8		G 1/8 ISO	0.09 / 2.3	1.06 / 27	13	
	AD-M6-1/4		G 1/4 ISO	0.09 / 2.3	1.18 / 30	17	
3/4 / 20	AD-M8-1/8	M8	G 1/8 ISO	0.13 / 32	1.14 / 29	13	
	AD-M8-1/4		G 1/4 ISO	0.13 / 32	1.26 / 32	17	
1 / 25	AD-M10 x 1.25-1/8	M10 x 1.25	G 1/8 ISO	0.16 / 4	1.22 / 31	13	
1-1/4 / 25	AD-M10 x 1.25-1/4	M10 x 1.25	G 1/4 ISO	0.16 / 4	1.34 / 34	17	
1-5/8 / 40	AD-M12 x 1.25-1/4	M12 x 1.25	G 1/4 ISO	0.27 / 6	1.34 / 34	17	
	AD-M12 x 1.25-3/8		G 3/8 ISO	0.27 / 6	1.46 / 37	22	

Non-Rotating Elliptical Piston Cylinders, Type DZH

Dimensions, Bores 5/8 to 2-1/2 in / 16 to 63 mm, Inch and Metric Series

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Type DZH

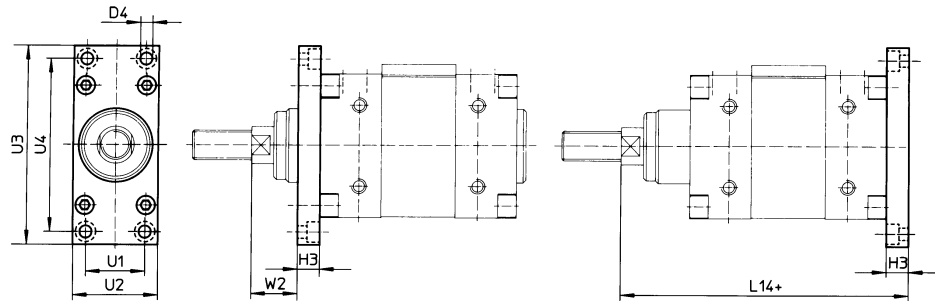
Bore in / mm	A1 in / mm	B1 f8 dia. in / mm	B2 in / mm	B3 in / mm	B4 in / mm	B5 in / mm	D1 Inch / Metric
5/8 / 16	0.63 / 16	0.63 / 16	0.47 / 12	0.79 / 20	0.91 / 23	1.22 / 31	8-32 UNC / M4
3/4 / 20	0.79 / 20	0.79 / 20	0.59 / 15	0.91 / 23	1.06 / 27	1.38 / 35	8-32 UNC / M4
1 / 25	0.87 / 22	0.87 / 22	0.65 / 16.5	1.02 / 26	1.20 / 30.5	1.57 / 40	10-24 UNC / M5
1-1/4 / 32	0.87 / 22	1.18 / 30	0.96 / 24.5	1.42 / 36	1.44 / 36.5	1.89 / 48	1/4-20 UNC / M6
1-5/8 / 40	0.94 / 24	1.38 / 35	1.10 / 28	1.57 / 40	1.97 / 50	2.44 / 62	1/4-20 UNC / M6
2 / 50	1.25 / 32	1.57 / 40	1.30 / 33	1.81 / 46	2.56 / 65	3.07 / 78	5/16-18 UNC / M8
2-1/2 / 63	1.26 / 32	1.65 / 42	1.57 / 40	2.13 / 54	3.54 / 90	4.09 / 104	3/8-16 UNC / M10
Bore in / mm	D2 f8 dia. in / mm	D7 thread	D8 in / mm	E1 port connection Inch / Metric	J1 in / mm	J2 in / mm	J3 in / mm
5/8 / 16	0.24 / 6	M4	0.09 / 2.3	10-32 UNF / M5	—	1.40 / 35.5	0.12 / 3
3/4 / 20	0.31 / 8	M4	0.13 / 3.2	1/8 NPT / G 1/8 ISO	—	1.56 / 39.5	0.20 / 5
1 / 25	0.39 / 10	M5	0.15 / 3.8	1/8 NPT / G 1/8 ISO	—	1.75 / 44.5	0.16 / 4
1-1/4 / 32	0.47 / 12	M5	—	1/8 NPT / G 1/8 ISO	2.50 / 63.5	2.12 / 53.8	0.12 / 3
1-5/8 / 40	0.63 / 16	M5	—	1/4 NPT / G 1/4 ISO	3.05 / 77.5	2.67 / 67.8	0.24 / 6
2 / 50	0.79 / 20	M6	—	1/4 NPT / G 1/4 ISO	3.68 / 93.5	3.30 / 83.8	0.22 / 5.5
2-1/2 / 63	0.79 / 20	M6	—	3/8 NPT / G 3/8 ISO	4.70 / 119.5	4.32 / 109.8	0.37 / 9.5
Bore in / mm	J4 in / mm	J5 in / mm	K1 Inch / Metric	L1 in / mm	L2 in / mm	L3 in / mm	L4 in / mm
5/8 / 16	—	0.47 / 12	10-32 UNF / M6	3.76 / 95.5	0.96 / 24.5	2.01 / 51	0.10 / 2.5
3/4 / 20	—	0.59 / 15	5/16-24 UNF / M8	4.25 / 108	1.07 / 27.3	2.26 / 57.4	0.10 / 2.5
1 / 25	—	0.71 / 18	3/8-24 UNF / M10 x 1.25	4.41 / 112	1.20 / 30.5	2.40 / 61	0.10 / 2.5
1-1/4 / 32	—	0.71 / 18	3/8-24 UNF / M10 x 1.25	4.72 / 120	1.38 / 35	2.99 / 76	0.16 / 4
1-5/8 / 40	—	1.26 / 32	1/2-20 UNF / M12 x 1.25	5.31 / 135	1.61 / 41	3.27 / 83	0.22 / 5.5
2 / 50	0.06 / 1.5	1.73 / 44	5/8-18 UNF / M16 x 1.5	5.63 / 143	1.93 / 49	3.23 / 82	0.20 / 5
2-1/2 / 63	0.12 / 3	2.52 / 64	5/8-18 UNF / M16 x 1.5	6.10 / 155	2.12 / 54	3.42 / 87	0.24 / 6
Bore in / mm	L5 in / mm	L6 in / mm	L7 in / mm	L8 in / mm	L9 in / mm	L10 in / mm	L15 in / mm
5/8 / 16	0.81 / 20.5	0.22 / 5.5	0.33 / 8.5	—	0.47 / 12	2.13 / 54	4.50 / 114.4
3/4 / 20	0.98 / 25	0.22 / 5.5	0.41 / 10.5	—	0.59 / 15	2.36 / 60	5.04 / 128
1 / 25	1.02 / 26	0.16 / 4	0.39 / 10	—	0.63 / 16	2.36 / 60	5.28 / 134
1-1/4 / 32	1.06 / 27	0.51 / 13	0.36 / 9.2	—	0.51 / 13	2.68 / 68	5.79 / 147
1-5/8 / 40	1.30 / 33	0.51 / 13	0.51 / 13	—	0.65 / 16.5	2.83 / 72	6.50 / 165
2 / 50	1.30 / 33	0.59 / 15	0.51 / 13	0.67 / 17	0.83 / 21	2.52 / 64	7.13 / 181
2-1/2 / 63	1.44 / 36.5	0.59 / 15	0.51 / 13	0.79 / 20	0.89 / 22.5	2.76 / 70	7.68 / 195
Bore in / mm	SW2 mm	SW3 mm	T1 in / mm	V1 in / mm	W1 in / mm		
5/8 / 16	5	4	0.22 / 5.5	0.47 / 12	0.69 / 17.5		
3/4 / 20	7	4	0.22 / 5.5	0.55 / 14	0.71 / 18		
1 / 25	9	5	0.28 / 7	0.55 / 14	0.79 / 20		
1-1/4 / 32	10	6	0.35 / 9	0.63 / 16	1.02 / 26		
1-5/8 / 40	13	6	0.35 / 9	0.79 / 20	1.18 / 30		
2 / 50	17	6	0.39 / 10	0.98 / 25	1.46 / 37		
2-1/2 / 63	17	6	0.47 / 12	1.10 / 28	1.57 / 40		

Bore in / mm	Max. Allowable Torque on Cylinder Rod in lb / Nm	Max. Rotation of Cylinder Rod	Note: The following minimum stroke lengths are required for non-contact position sensing with proximity sensors.	Min. Stroke Length - 1 Sensor in / mm	Min. Stroke Length - 2 Sensors in / mm
5/8 / 16	4.44 / 0.5	±3.1°		0.39 / 10	0.39 / 10
3/4 / 20	5.33 / 0.6	±2.6°			0.39 / 10
1 / 25	7.10 / 0.8	±2.4°			0.39 / 10
1-1/4 / 32	8.88 / 1.06	±1.7° (S6: ± 1.3°)			1.26 / 32
1-5/8 / 40	10.66 / 1.2	±1.4° (S6: ± 1.0°)			1.30 / 33
2 / 50	15.10 / 1.7	±45°			1.22 / 31
2-1/2 / 63	17.76 / 2.0	±40°			1.18 / 30

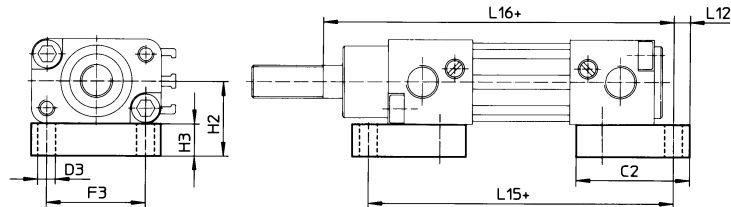
Non-Rotating Elliptical Piston Cylinders, Type DZH

Mounting Hardware, Dimensions

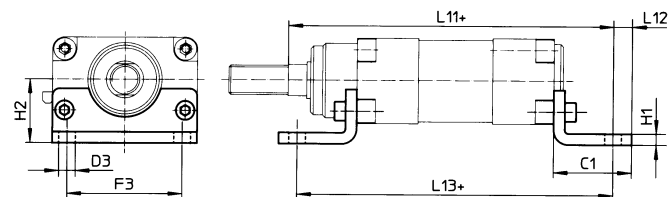
Flange Mount Type FZS-...
for Bores: 5/8 to 2-1/2 in /
16 to 63 mm
(1 flange and mounting screws)



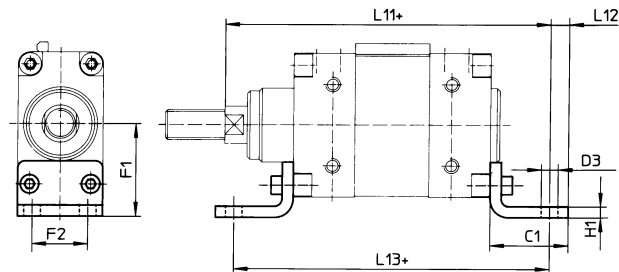
Foot Mount - wide side Type HZB-...
for Bores: 5/8 to 1 in / 16 to 25 mm
(2 feet with mounting screws)



Foot Mount - wide side Type HZB-...
for Bores: 1-1/4 to 2-1/2 in / 32 to 63 mm
(2 feet with mounting screws)



Foot Mount - narrow side Type HZS-...
for Bores: 5/8 to 2-1/2 in / 16 to 63 mm
(2 feet with mounting screws)



+ = plus stroke length

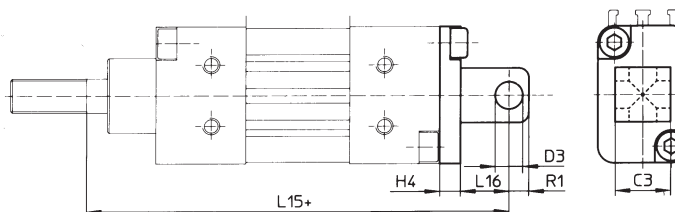
Bore in / mm	C1 in / mm	C2 in / mm	D3 in / mm	D4 in / mm	F1 in / mm	F2 in / mm	F3 in / mm
5/8 / 16	0.98 / 25	1.06 / 27	0.18 / 4.5	0.18 / 4.5	0.96 / 24.5	0.47 / 12	0.91 / 23
3/4 / 20	0.98 / 25	1.18 / 30	0.18 / 4.5	0.18 / 4.5	1.08 / 27.5	0.59 / 15	1.06 / 27
1 / 25	1.18 / 30	1.38 / 35	0.22 / 5.5	0.22 / 5.5	1.18 / 30	0.65 / 16.5	1.20 / 30.5
1-1/4 / 32	1.26 / 32	—	0.28 / 7	0.22 / 5.5	1.26 / 32	0.94 / 24	1.26 / 32
1-1/2 / 40	1.50 / 38	—	0.35 / 9	0.22 / 5.5	1.57 / 40	0.98 / 25	1.81 / 46
2 / 50	1.65 / 42	—	0.35 / 9	0.26 / 6.6	1.97 / 50	1.18 / 30	2.44 / 62
2-1/2 / 63	1.97 / 50	—	0.35 / 9	0.26 / 6.6	2.44 / 62	1.50 / 38	3.46 / 88
Bore in / mm	H1 in / mm	H2 in / mm	H3 in / mm	L11 in / mm	L12 in / mm	L13 in / mm	L14 in / mm
5/8 / 16	0.16 / 4	0.79 / 20	0.39 / 10	4.57 / 116	0.16 / 4	4.72 / 120	4.13 / 105
3/4 / 20	0.16 / 4	0.85 / 21.5	0.39 / 10	5.08 / 129	0.16 / 4	5.20 / 132	4.65 / 118
1 / 25	0.16 / 4	0.91 / 23	0.39 / 10	5.39 / 137	0.20 / 5	5.59 / 142	4.80 / 122
1-1/4 / 32	0.16 / 4	1.02 / 26	0.39 / 10	5.67 / 144	0.31 / 8	5.59 / 142	5.12 / 130
1-1/2 / 40	0.20 / 5	1.14 / 29	0.39 / 10	6.42 / 163	0.39 / 10	6.34 / 161	5.71 / 145
2 / 50	0.24 / 6	1.34 / 34	0.47 / 12	6.89 / 175	0.39 / 10	6.69 / 170	6.10 / 155
2-1/2 / 63	0.24 / 6	1.50 / 38	0.59 / 15	7.48 / 190	0.59 / 15	7.28 / 185	6.69 / 170
Bore in / mm	L15 in / mm	L16 in / mm	U1 in / mm	U2 in / mm	U3 in / mm	U4 in / mm	W2 in / mm
5/8 / 16	3.48 / 88.5	3.94 / 100	—	0.83 / 21	2.36 / 60	1.89 / 48	0.28 / 7
3/4 / 20	3.95 / 100.5	4.45 / 113	—	0.94 / 24	2.76 / 70	2.13 / 54	0.31 / 8
1 / 25	4.11 / 104.5	4.65 / 118	—	1.06 / 27	2.95 / 75	2.36 / 60	0.39 / 10
1-1/4 / 32	—	—	0.94 / 24	1.42 / 36	2.95 / 75	2.44 / 62	0.63 / 16
1-1/2 / 40	—	—	1.10 / 28	1.57 / 40	3.54 / 90	3.07 / 78	0.79 / 20
2 / 50	—	—	1.26 / 32	1.81 / 46	4.25 / 108	3.70 / 94	0.98 / 25
2-1/2 / 63	—	—	1.57 / 40	2.13 / 54	5.28 / 134	4.72 / 120	0.98 / 25

Non-Rotating Elliptical Piston Cylinders, Type DZH

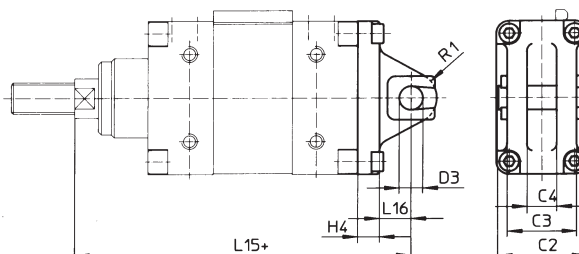
Mounting Hardware, Dimensions

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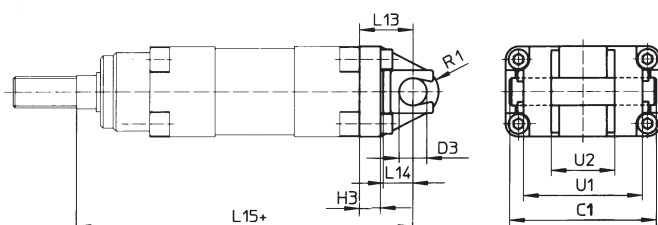
Clevis Flange Mount Type SZSB-...
for Bores: 5/8 to 1 in / 16 to 25 mm
(1 clevis flange with mounting screws)



Clevis Flange Mount, narrow side Type SZS-...
for Bores: 1-1/4 to 2-1/2 in / 32 to 63 mm
(1 clevis flange with king pin and mounting screws)



Clevis Flange Mount, wide side Type SZB-...
for Bores: 1-1/4 to 2-1/2 in / 32 to 63 mm
(1 clevis flange with king pin and mounting screws)



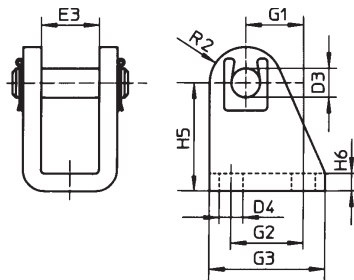
Specify bore when ordering
+ = plus stroke length

Bore in / mm	C1 in / mm	C2 in / mm	C3 in / mm	C4 in / mm	D3 in / mm	H3 in / mm	H4 in / mm
5/8 / 16	—	—	0.31 / 8	—	0.16 / 4	—	0.24 / 6
3/4 / 20	—	—	0.47 / 12	—	0.24 / 6	—	0.24 / 6
1 / 25	—	—	0.63 / 16	—	0.31 / 8	—	0.24 / 6
1-1/4 / 32	1.77 / 45	1.38 / 35	1.02 / 26	0.37 / 9.4	0.39 / 10	0.30 / 7.6	0.31 / 8
1-1/2 / 40	2.40 / 61	1.54 / 39	1.14 / 29	0.49 / 12.4	0.47 / 12	0.38 / 9.6	0.35 / 9
2 / 50	2.76 / 70	1.77 / 45	1.38 / 35	0.57 / 14.4	0.47 / 12	0.42 / 10.6	0.43 / 11
2-1/2 / 63	3.23 / 82	2.09 / 53	1.61 / 41	0.65 / 16.4	0.63 / 16	0.46 / 11.6	0.47 / 12
Bore in / mm	L13 in / mm	L14 in / mm	L15 in / mm	L16 in / mm	R1 in / mm	U1 in / mm	U2 in / mm
5/8 / 16	—	—	4.29 / 109	0.31 / 8	0.20 / 5	—	—
3/4 / 20	—	—	4.88 / 124	0.39 / 10	0.28 / 7	—	—
1 / 25	—	—	5.20 / 132	0.55 / 14	0.39 / 10	—	—
1-1/4 / 32	0.87 / 22	0.51 / 13	5.59 / 142	0.55 / 14	0.43 / 11	1.45 / 36.8	0.63 / 16
1-1/2 / 40	0.98 / 25	0.57 / 14.5	6.30 / 160	0.63 / 16	0.51 / 13	2.05 / 52	1.10 / 282
2 / 50	1.06 / 27	0.59 / 15	6.69 / 170	0.63 / 16	0.51 / 13	2.36 / 60	1.26 / 32
2-1/2 / 63	1.38 / 35	0.79 / 20	7.48 / 190	0.91 / 23	0.67 / 17	2.76 / 70	1.57 / 40

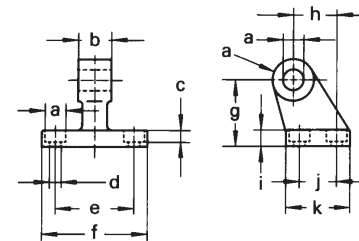
Non-Rotating Elliptical Piston Cylinders, Type DZH

Mounting Hardware, Dimensions

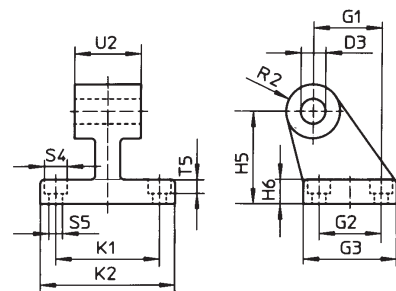
Clevis Mount Type LBN-...
for Clevis Flange Type SZSB-...



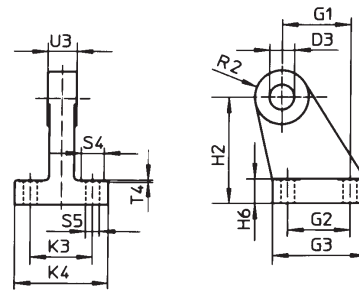
Clevis Mount Type LBZB-32
for Clevis Flange Type SZB-32



Clevis Mount Type LN-...
for Clevis Flange Type SZB-...



Clevis Mount Type LBZS-...
for Clevis Flange Type SZS-...



Dimensions

a 0.39 in / 10 mm	g 1.26 in / 32 mm
b 0.63 in / 16 mm	h 0.83 in / 21 mm
c 0.22 in / 5.7 mm	i 0.31 in / 8 mm
d 0.22 in / 5.5 mm	j 0.71 in / 18 mm
e 1.50 in / 38 mm	k 1.22 in / 31 mm
f 2.01 in / 51 mm	

Bore in / mm	D3 in / mm	D4 in / mm	E3 in / mm	G1 in / mm	G2 in / mm	G3 in / mm	H2 in / mm
5/8 / 16	0.16 / 4	0.18 / 4.5	0.32 / 8.1	0.54 / 13.8	0.49 / 12.5	0.79 / 20v	—
3/4 / 20	0.24 / 6	0.22 / 5.5	0.48 / 12.1	0.51 / 13	0.59 / 15	0.98 / 25	—
1 / 25	0.31 / 8	0.26 / 6.6	0.63 / 16.1	0.63 / 16	0.79 / 20	1.26 / 32	—
1-1/4 / 32	0.39 / 10	—	—	0.83 / 21	0.71 / 18	1.22 / 31	1.32 / 33.5
1-1/2 / 40	0.47 / 12	—	—	0.94 / 24	0.87 / 22	1.38 / 35	1.57 / 40
2 / 50	0.47 / 12	—	—	1.30 / 33	1.18 / 30	1.77 / 45	2.03 / 51.5
2-1/2 / 63	0.63 / 16	—	—	1.46 / 37	1.38 / 35	1.97 / 50	2.44 / 62
Bore in / mm	H5 in / mm	H6 in / mm	K1 in / mm	K2 in / mm	K3 in / mm	K4 in / mm	S4 in / mm
5/8 / 16	0.94 / 24	0.10 / 2.5	—	—	—	—	—
3/4 / 20	1.06 / 27	0.12 / 3	—	—	—	—	—
1 / 25	1.18 / 30	0.16 / 4	—	—	—	—	—
1-1/4 / 32	—	0.31 / 8	—	—	0.94 / 24	1.38 / 35	0.39 / 10
1-1/2 / 40	1.42 / 36	0.39 / 10	1.61 / 41	2.13 / 54	1.10 / 28	1.54 / 39	0.39 / 10
2 / 50	1.77 / 45	0.47 / 12	1.97 / 50	2.56 / 65	1.18 / 30	1.77 / 45	0.43 / 11
2-1/2 / 63	1.97 / 50	0.47 / 12	2.05 / 52	2.64 / 67	1.50 / 38	2.09 / 53	0.43 / 11
Bore in / mm	S5 in / mm	R2 in / mm	T4 in / mm	T5 in / mm	U2 in / mm	U3 in / mm	
5/8 / 16	—	0.20 / 5	—	—	—	—	
3/4 / 20	—	0.28 / 7	—	—	—	—	
1 / 25	—	0.39 / 10	—	—	—	—	
1-1/4 / 32	0.22 / 5.5	0.39 / 10	0.02 / 0.6	—	0.63 / 16	0.35 / 9	
1-1/2 / 40	0.22 / 5.5	0.43 / 11	0.02 / 0.6	0.22 / 5.7	1.10 / 28	0.47 / 12	
2 / 50	0.26 / 6.6	0.51 / 13	0.02 / 0.6	0.27 / 6.8	1.26 / 32	0.55 / 14	
2-1/2 / 63	0.26 / 6.6	0.59 / 15	0.03 / 0.7	0.27 / 7.8	1.57 / 40	0.63 / 16	

Metric Series

Constructing an Order Number.

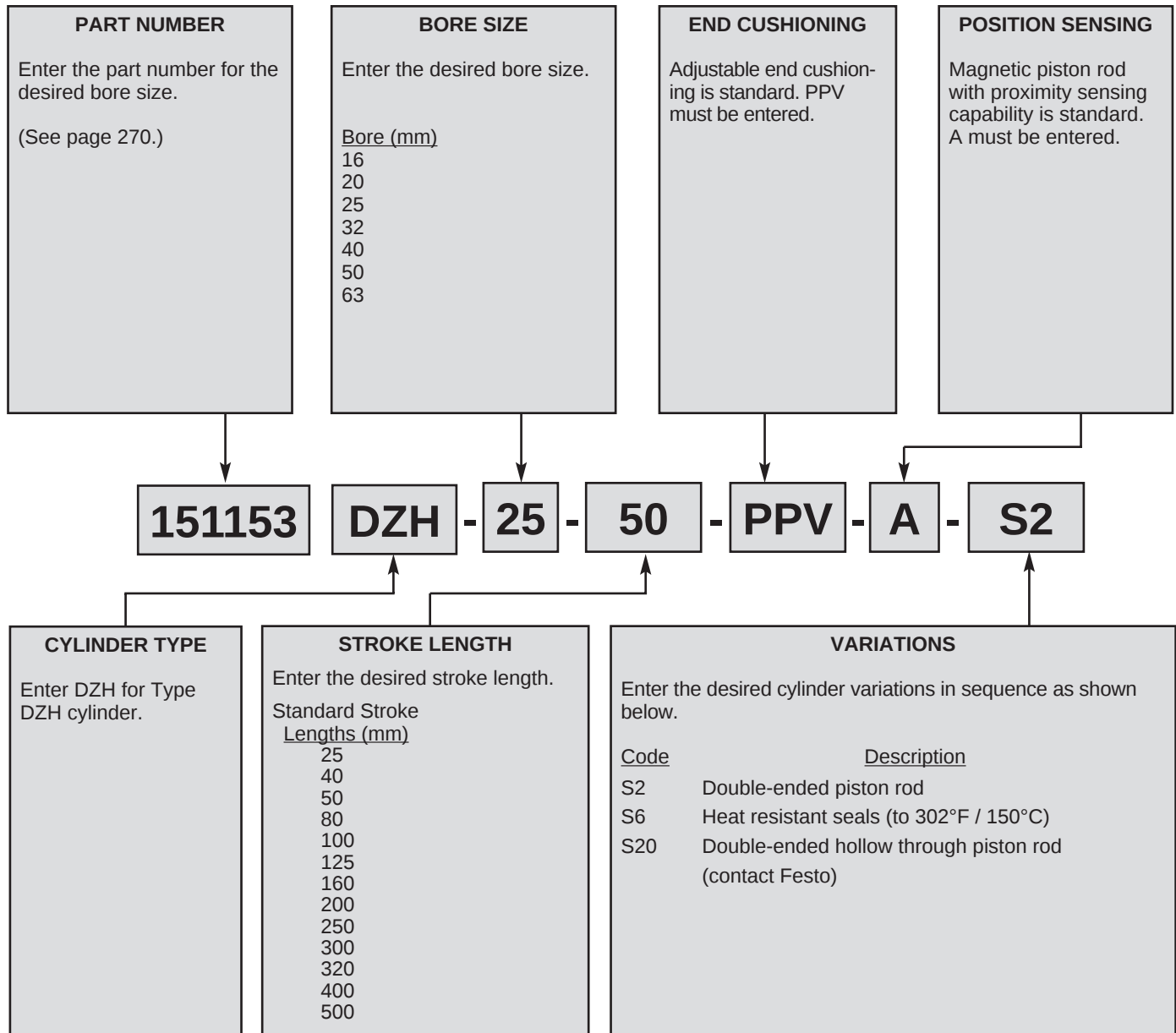
Specify the Following.

Part Number, Cylinder Type (DZH), Bore Size, Stroke Length, Adjustable End Cushioning (PPV), Non-contact Position Sensing, and desired Variations.

Ordering Example

Bore 25 mm, stroke 50 mm, adjustable end cushioning, contactless position sensing, double-ended piston rod:

151153 DZH-25-50-PPV-A-S2



Inch Series

Follow the above procedure for constructing order numbers, except specify bores and strokes in inches.

Example:

Bore 2", stroke 10", adjustable end cushioning, non-contact position sensing, double-ended piston rod.

Order number: 158374 DZH-2-10-PPV-A-S2.

Non-rotating Elliptical Piston Cylinders, Type DZH

Order Numbers

Order Number - Metric Series																	
Part No.	Type	Bore	Stroke	Cush- ioning	Option	Part No.	Type	Bore	Stroke	Cush- ioning	Option	Part No.	Type	Bore	Stroke	Cush- ioning	Option
151145	DZH-	16-	25-	PPV-A		151134	DZH-	20-	25-	PPV-A		151121	DZH-	25-	25-	PPV-A	
151146	DZH-	16-	40-	PPV-A		151135	DZH-	20-	40-	PPV-A		151122	DZH-	25-	40-	PPV-A	
151147	DZH-	16-	50-	PPV-A		151136	DZH-	20-	50-	PPV-A		151123	DZH-	25-	50-	PPV-A	
151148	DZH-	16-	80-	PPV-A		151137	DZH-	20-	80-	PPV-A		151124	DZH-	25-	80-	PPV-A	
151149	DZH-	16-	100-	PPV-A		151138	DZH-	20-	100-	PPV-A		151125	DZH-	25-	100-	PPV-A	
151150	DZH-	16-	125-	PPV-A		151139	DZH-	20-	125-	PPV-A		151126	DZH-	25-	125-	PPV-A	
151151	DZH-	16-	160-	PPV-A		151140	DZH-	20-	160-	PPV-A		151127	DZH-	25-	160-	PPV-A	
151152	DZH-	16-	200-	PPV-A		151141	DZH-	20-	200-	PPV-A		151128	DZH-	25-	200-	PPV-A	
150295	DZH-	16-	...-	PPV-A		151142	DZH-	20-	250-	PPV-A		151129	DZH-	25-	250-	PPV-A	
151155	DZH-	16-	...-	PPV-A	-S 2	151143	DZH-	20-	320-	PPV-A		151130	DZH-	25-	320-	PPV-A	
151158	DZH-	16-	...-	PPV-A	-S 6	150294	DZH-	20-	...-	PPV-A		151131	DZH-	25-	400-	PPV-A	
158379	DZH-	16-	...-	PPV-A	-S 20	151154	DZH-	20-	...-	PPV-A	-S 2	151132	DZH-	25-	500-	PPV-A	
						151157	DZH-	20-	...-	PPV-A	-S 6	150293	DZH-	25-	...-	PPV-A	
						158380	DZH-	20-	...-	PPV-A	-S 20	151153	DZH-	25-	...-	PPV-A	-S 2
												151156	DZH-	25-	...-	PPV-A	-S 6
												158381	DZH-	25-	...-	PPV-A	-S 20
14041	DZH-	32-	25-	PPV-A		14052	DZH-	40-	25-	PPV-A		14063	DZH-	50-	25-	PPV-A	
14042	DZH-	32-	40-	PPV-A		14053	DZH-	40-	40-	PPV-A		14064	DZH-	50-	40-	PPV-A	
14043	DZH-	32-	50-	PPV-A		14054	DZH-	40-	50-	PPV-A		14065	DZH-	50-	50-	PPV-A	
14044	DZH-	32-	80-	PPV-A		14055	DZH-	40-	80-	PPV-A		14066	DZH-	50-	80-	PPV-A	
14045	DZH-	32-	100-	PPV-A		14056	DZH-	40-	100-	PPV-A		14067	DZH-	50-	100-	PPV-A	
14046	DZH-	32-	125-	PPV-A		14057	DZH-	40-	125-	PPV-A		14068	DZH-	50-	125-	PPV-A	
14047	DZH-	32-	160-	PPV-A		14058	DZH-	40-	160-	PPV-A		14069	DZH-	50-	160-	PPV-A	
14048	DZH-	32-	200-	PPV-A		14059	DZH-	40-	200-	PPV-A		14070	DZH-	50-	200-	PPV-A	
14049	DZH-	32-	250-	PPV-A		14060	DZH-	40-	250-	PPV-A		14071	DZH-	50-	250-	PPV-A	
14050	DZH-	32-	300-	PPV-A		14061	DZH-	40-	300-	PPV-A		14072	DZH-	50-	300-	PPV-A	
14040	DZH-	32-	...-	PPV-A		14051	DZH-	40-	...-	PPV-A		14062	DZH-	50-	...-	PPV-A	
151772	DZH-	32-	...-	PPV-A	-S 2	151773	DZH-	40-	...-	PPV-A	-S 2	151774	DZH-	50-	...-	PPV-A	-S 2
16531	DZH-	32-	...-	PPV-A	-S 6	16532	DZH-	40-	...-	PPV-A	-S 6	16533	DZH-	50-	...-	PPV-A	-S 6
14074	DZH-	63-	25-	PPV-A													
14075	DZH-	63-	40-	PPV-A													
14076	DZH-	63-	50-	PPV-A													
14077	DZH-	63-	80-	PPV-A													
14078	DZH-	63-	100-	PPV-A													
14079	DZH-	63-	125-	PPV-A													
14080	DZH-	63-	160-	PPV-A													
14081	DZH-	63-	200-	PPV-A													
14082	DZH-	63-	250-	PPV-A													
14083	DZH-	63-	300-	PPV-A													
14073	DZH-	63-	...-	PPV-A													
151775	DZH-	63-	...-	PPV-A	-S 2												
16534	DZH-	63-	...-	PPV-A	-S 6												
Order Number - Inch Series																	
Part No.	Type	Bore	Stroke	Cush- ioning	Option	Part No.	Type	Bore	Stroke	Cush- ioning	Option	Part No.	Type	Bore	Stroke	Cush- ioning	Option
157609	DZH-	5/8-	...-	PPV-A		157610	DZH-	3/4-	...-	PPV-A		157611	DZH-	1-	...-	PPV-A	
157612	DZH-	5/8-	...-	PPV-A	-S 2	157613	DZH-	3/4-	...-	PPV-A	-S 2	157614	DZH-	1-	...-	PPV-A	-S 2
157615	DZH-	5/8-	...-	PPV-A	-S 6	157616	DZH-	3/4-	...-	PV-A	-S 6	157617	DZH-	1-	...-	PPV-A	-S 6
16257	DZH-	1-1/4-	...-	PPV-A		16258	DZH-	1-5/8-	...-	PPV-A		16259	DZH-	2-	...-	PPV-A	
158372	DZH-	1-1/4-	...-	PPV-A	-S 2	158373	DZN-	1-5/8-	...-	PPV-A	-S 2	158374	DZH-	2-	...-	PPV-A	-S 2
16261	DZH-	1-1/4-	...-	PPV-A	-S 6	16262	DZH-	1-5/8-	...-	PPV-A		16263	DZH-	2-	...-	PPV-A	-S 6
16260	DZH-	2-1/2-	...-	PPV-A													
158375	DZH-	2-1/2-	...-	PPV-A	-S 2												
16264	DZH-	2-1/2-	...-	PPV-A	-S 6												

Non-Rotating Elliptical Piston Cylinders, Type DZH

Mounting Hardware and Weights

Mounting Hardware for Inch / Metric Series								
Part No.	Type	Bore mm	Part No.	Type	Bore mm	Part No.	Type	Bore mm
151936	HZB	- 16	151935	HZB	- 20	151934	HZB	- 25
151933	HZS	- 16	151932	HZS	- 20	151931	HZS	- 25
151927	SZSB	- 16	151926	SZSB	- 20	151925	SZSB	- 25
6057	LBN	- 8/10	6058	LBN	- 12/16	6059	LBN	- 20/25
151930	FZS	- 16	151929	FZS	- 20	151928	FZS	- 25
157328	AD	- M6-M5 (Metric Series)	157331	AD	- M8-1/8 (Metric Series)	157333	AD	- M10 x 1.25-1/8 (Metric Series)
157329	AD	- M6-1/8 (Metric Series)	157332	AD	- M8-1/4 (Metric Series)	157334	AD	- M10 x 1.25-1/4 (Metric Series)
157330	AD	- M6-1/4 (Metric Series)						
14875	HZB	- 32	14876	HZB	- 40	14877	HZB	- 50
14879	HZS	- 32	14880	HZS	- 40	14881	HZS	- 50
14883	SZS	- 32	14884	SZS	- 40	14885	SZS	- 50
30798	SZB	- 32	30799	SZB	- 40	30629	SZB	- 50
33843	LBZS	- 32	33844	LBZS	- 40	33845	LBZS	- 50
33842	LBZB	- 32	5148	LN	- 40	5149	LN	- 50
14887	FZS	- 32	14888	FZS	- 40	14889	FZS	- 50
157333	AD	- M10 x 1.25-1/8 (Metric Series)	160256	AD	- M12 x 1.25-1/4 (Metric Series)			
157334	AD	- M10 x 1.25-1/4 (Metric Series)	160257	AD	- M12 x 1.25-3/8 (Metric Series)			
14878	HZB	- 63						
14882	HZS	- 63						
14886	SZS	- 63						
30630	SZB	- 63						
33846	LBZS	- 63						
5150	LN	- 63						
14890	FZS	- 63						

Wear Parts Kit

For Cylinder Type	DZH-5/8-..., DZH-16-...	DZH-3/4-..., DZH-20-...	DZH-1-..., DZH-25-...	DZH-1-1/4-..., DZH-32-...	DZH-1-5/8-..., DZH-40-...	DZH-2-..., DZH-50-...	DZH-2-1/2-..., DZH-63-...
Order Number (Part No. only)	121125	121126	121127	108706	108707	108708	108709

Weight

Base Cylinder			Mounting Hardware			
Bore	Type DZH-...	Additional weight per 3/8 in / 10 mm Stroke	HZB-...	HZS-...	FZS-...	SZS-...
in / mm	Basic Weight lb / kg	lb / kg	lb / kg	lb / kg	lb / kg	lb / kg
5/8 / 16	0.309 / 0.140	0.024 / 0.011	0.110 / 0.050	0.132 / 0.060	0.066 / 0.030	—
3/4 / 20	0.507 / 0.230	0.033 / 0.015	0.132 / 0.060	0.154 / 0.070	0.088 / 0.040	—
1 / 25	0.728 / 0.330	0.046 / 0.021	0.176 / 0.080	0.199 / 0.090	0.110 / 0.050	—
1-1/4 / 32	1.102 / 0.500	0.066 / 0.030	0.287 / 0.130	0.231 / 0.105	0.132 / 0.060	0.176 / 0.080
1-5/8 / 40	1.808 / 0.820	0.088 / 0.040	0.518 / 0.235	0.364 / 0.165	0.176 / 0.080	0.265 / 0.120
2 / 50	2.646 / 1.200	0.132 / 0.060	0.904 / 0.410	0.595 / 0.270	0.298 / 0.135	0.375 / 0.170
2-1/2 / 63	3.726 / 1.690	0.176 / 0.080	1.411 / 0.640	0.805 / 0.365	0.573 / 0.260	0.705 / 0.320
Bore	SZB-...	SZSB-...	LBN-...	LBZB-...	LN-...	LBZS-...
in / mm	lb / kg	lb / kg	lb / kg	lb / kg	lb / kg	lb / kg
5/8 / 16	—	0.022 / 0.010	0.044 / 0.020	—	—	—
3/4 / 20	—	0.044 / 0.020	0.088 / 0.040	—	—	—
1 / 25	—	0.088 / 0.040	0.187 / 0.085	—	—	—
1-1/4 / 32	0.375 / 0.170	—	—	0.309 / 0.140	—	0.199 / 0.090
1-5/8 / 40	0.617 / 0.280	—	—	—	0.485 / 0.220	0.298 / 0.135
2 / 50	0.904 / 0.410	—	—	—	0.860 / 0.390	0.518 / 0.235
2-1/2 / 63	1.455 / 0.660	—	—	—	1.102 / 0.500	0.673 / 0.305

Adapter	
Type	lb / kg
AD-M6-M5	0.013 / 0.006
AD-M6-1/8	0.018 / 0.008
AD-M6-1/4	0.033 / 0.015
AD-M8-1/8	0.018 / 0.008
AD-M8-1/4	0.035 / 0.016
AD-M10 x 1.25-1/8	0.018 / 0.008
AD-M10 x 1.25-1/4	0.035 / 0.016
AD-M12 x 1.25-1/4	0.062 / 0.028
AD-M12 x 1.25-3/8	0.031 / 0.014